Before the
Federal Communications Commission
WASHINGTON, D.C. 20554

In the matter of	
Notice of Proposed Rule making	
In the Matter of Preserving the Open Internet	GN Docket No. 01-191

COMMENT

QoS
(Quality of Service)
(or 40 years of Unresolved Computational Queue'ng Theory)

Every month I purchase internet services from Verizon. What I basically purchase, for the purpose of this paper, is a connection to the internet with a maximum bit rate of (a little over) 3 mega bits per second. But my connection is a bit peculiar. Its really 3 megabits download (data to my computer), and 768 thousand bits per second from my computer. Generally this is what a residential DSL customer gets from ISP's.

For browsing of commercial web sites, the 3Mbps/768Kbps scheme appears to be just fine, as commercial sites have the ability to upload at 3Mbps as fast as a customer can download at 3Mbps.

For residential customers that want to (legally) browse other residential customers sites (video swapping, family pictures, etc) there is a disparity of bandwidth usage. One residential customer can only upload at the maximum rate of 768Kbps. The other residential customer, although capable of downloading 3Mbps, will only receive data at the rate of 768Kbps. I suppose this is the planned life of the ordinary DSL residential customer.

Unfortunately for ISP's, there are some extra ordinary customers that have nothing better to do than to figure out ways to maximize bandwidth. One way is to divvy up the download function to amongst several 768kbps up-loaders to obtain the maximum download throughput of 3Mbps.

The application BitTorrent, I believe, was created just so that the disparity of communication speed amongst residential customers can be minimized. If everyone had a download speed of 3Mbps, and an upload speed of 3Mbps, there would be no need to divide the download process. A single connection would suffice.

So depending on ones point of view, BitTorrent is either a well designed data transfer program (App), or malware that congests the network.

Now, far more users are utilizing their 'paid for' bandwidth upload/download limitations to a far greater utilization than what the ISP's had initially planed for. One response from the ISP would have been to increase the capacity to meet demand (sorta like build more power plants to meet peek demand.) The other response would be to curtail capacity usage (much like electrical brown-outs, or complete black-out failure). Or maybe, limit the the number of new customers that can subscribe to the overburdened system (much like building a house on your own property, and not be allowed to hookup to 'city water', or create a well to an over taxed aquifer.)

One ISP's solution was to implement QoS network management. For BitTorrent users QoS management was to reduce the customers utilization of the paid for bandwidth, or to terminate one or more of the connections. From reports, no allegation of network congestion was ever proven to exist before QoS levels are to be applied.

Once BitTorrent developers were made aware of the ISP's solution, developers of BitTorrent began counter measures to the ISP's attempts in curtailing BitTorrent effectiveness. And I'm sure that soon thereafter counter-counter measures would be developed by the ISP's. Its just a matter of time before the cycle begins again.[1] Darwin best described this evolution as natural selection.

WireLess QoS

I have read the paper by 4G[2] Americas LLC, 10/7/2010 “Traffic Management Techniques for Mobile Broadband Networks : Living in an orthogonal World” regarding how wireless works with voice, and broadband data. I have read the tables, and how ergonomics are applied to QoS classification's within that radio transmission service. The paper alleges that the next generation of wireless will be completely packetised, which I presume will be all (IP?) broadband.

Like that of the BitTorrent QoS issues, one should be able to see that in the long run wireless Apps will also run afoul of the Wireless QoS schema employed by network engineers. For instance, an App may convince the 'Last Mile' network that the data being transmitted is a video, or voice communications. But in reality the data transmission does not truly conform to, or need any special QoS provisioning.

This is probably why 4G wants to control, absolutely, the functioning of any 3rd party software App that may not be beholding to any wireless operators

1 I believe a truce was developed between Comcast, and BitTorrent developers.

2 Paper says 3G Americas, But submitted by 4G Americas

sense of network ethos. The App wants to provide the (presumably) best customer experience as possible. Yet this may not be possible if the App is QoS'd to a level far from optimal. Darwinian evolution suggests that subsequent versions of the App will be taught in strategies to successfully elevate its native QoS assignment.

If the wireless network team is allowed to determine what may or may not be loaded onto a mobile device, that is owned by the customer, and paid for by the customer, this will curtail further “out of the box” innovations.[34]

Who pays for QoS?

Which end node is responsible for paying the QoS levels that are different from one or more informational services. Does the client machine determine that? How about a service that refuses to go along with the prioritized service request – can they be forced to pay for that service?

QoS service from the same ISP that provides for all of the end points may work. Data is transmitted and managed completely within that ISP's own network.

QoS service from many ISP's, all over the world, will be more problematical. After all, ISP's have a monetary incentive to provide the best service to their own paying customers. Should QoS level requests from non customers be billed back to the clients ISP?

ISP's with limited resources may not want to give away resources based on some other ISP's request for better service. Should they be forced to accept, even if its contrary to good network management practices?

Customers with limited budgets may want to limit video commercials ability to alter QoS levels.

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3 Under the guidelines adopted by content providers and wireless carriers, acting through the Mobile Marketing Association (“MMA”), prior approval for any new short code campaign or modification thereof is required before a carrier will provision a content provider’s short code. The mobile content industry – i.e., MICC’s members – and mobile carriers adopted those MMA. T-Mobile ex parte filing, 9/30/2010

4 T-Mobile ex parte filing, 9/30/2010, attachment. This paper in particular frightens me. The paper demonstrates that market forces have very little to do on how managed services are to be used. Best practices – who decides? Whats reasonable – Wireless operator decides? From the face of it it appears that wireless operators functions as a censor, as well as a telecommunications provider.